

## Aegis Modernization Program

### Executive Summary

- DDG 51 with Aegis Weapon System (AWS) Baseline 7.1.2.1 has limited effectiveness in littoral waters where it may encounter asymmetric, high-speed surface threats.
- Several key tests of DDG 51 with AWS Baseline 7.1.2.1 were not completed in accordance with the DOT&E-approved Test and Evaluation Master Plan (TEMP) and test plan.

### System

- The Navy's Aegis Modernization program provides updated technology and systems for existing Aegis Guided Missile Cruisers (CG 47) and Destroyers (DDG 51). This planned, phased program also provides similar technology and systems for Destroyers under new construction.
- The AWS, carried on DDG 51 Guided Missile Destroyer and CG 47 Guided Missile Cruisers, integrates the following components:
  - The AWS AN/SPY-1 three dimensional (range, altitude, and azimuth) multi-function radar
  - SQQ-89 Undersea Warfare suite that includes the AN/SQS 53 sonar, SQR-19 passive towed sonar array (DDG 51-78, CG 52-73), and the SH-60B or MH-60R Helicopter (DDG 79 and newer have a hangar to allow the ship to carry and maintain its own helicopter)
  - Close-In Weapon System (CIWS)
  - Five-inch diameter gun
  - Harpoon anti-ship cruise missiles (DDG 51-78, CG 52-73)
  - The Vertical Launch System that can launch Tomahawk land-attack missiles, Standard surface-to-air missiles, Evolved SeaSparrow Missiles, and Vertical Launch Anti-Submarine Rocket missiles
- AWS Baseline 7.1.2.1 modified the AWS computer programs to correct deficiencies from Baseline 7.1.1.1, improve AN/SPY-1D(V) performance, and integrate CIWS Block 1B with the AWS to provide surface warfare capability.

### Mission

The Maritime Component commander can employ DDG 51 and CG 47 to:

- Conduct Anti-Air Warfare, Anti-Surface Warfare, and Anti-Submarine Warfare



- Conduct Strike Warfare when armed with Tomahawk missiles
- Conduct offensive and defensive warfare operations simultaneously when necessary
- Operate independently and with Carrier or Expeditionary Strike Groups as well as with other joint or coalition partners

### Prime Contractors

- General Dynamics Marine Systems Bath Iron Works, Bath, Maine
- Northrop Grumman Shipbuilding, Pascagoula, Mississippi
- Lockheed Martin Maritime Systems and Sensors, Moorestown, New Jersey

### Activity

- Commander, Operational Test and Evaluation Force (COTF) issued the final test report for operational testing of AWS Baseline 7.1.2.1 (OT-IIIJ), conducted from February to August 2008.
- The Navy plans to conduct operational testing in FY11 of the newest DDG 51 Guided Missile Destroyer with AWS Baseline 7.1.R and the first of the modernized CG 47 Guided

# NAVY PROGRAMS

Missile Cruisers with Advanced Capability Build 08 (ACB08) Baseline in FY10.

## Assessment

- COTF testers were unable to complete several key tests of AWS Baseline 7.1.2.1 in accordance with the DOT&E-approved TEMP and test plan. Tests not completed during OT-IIIJ included the following:
  - Testing of the air/surface logic of the CIWS due to non-availability of CIWS caused by a failed power modulator. The power modulator is a normally reliable part with an extremely low rate of failure that is not normally stocked onboard the ship
  - Testing of fratricide issues between CIWS and the Vertical Launching System due to non-availability of CIWS
  - Surface tracking capability of the SPY-1D(V) Radar due to inadequate initial crew training
- Testing against high-speed surface threats due to unsatisfactory CIWS performance caused by optical sight misalignment and inadequate initial crew training
- The AWS Baseline 7.1.2.1 continues to have limited effectiveness in littoral waters against asymmetric high-speed surface threats.

## Recommendations

- Status of Previous Recommendations. The Navy has completed three of the four FY05 recommendations, one of the four FY06 recommendations, and none of the FY08 recommendations. The remaining recommendations merit additional emphasis.
- FY09 Recommendation.
  1. The Navy should complete all planned key operational tests of AWS Baseline 7.1.2.1 in accordance with the DOT&E-approved TEMP and test plan.